

Application No.: 10/660,689
Amendment dated February 13, 2007
Reply to Office Action of January 5, 2006

Amendments to the Claims

The following claim listing reflects the status of the claims pending in this application. The following amendment format adheres to the format described in 37 CFR 1.173. All amendments are made relative to the claims that appear in issued patent 5,200,072 pursuant to 37 CFR 1.173(g).

1. (Amended) A screen cylinder comprising:

a generally cylindrical screening medium having a plurality of openings therethrough;

a generally cylindrical structural backing plate for structurally supporting said screening medium and having a plurality of openings therethrough; [and]

said screening medium and said structural backing plate lying concentrically one within the other and having respective opposed surfaces in engagement with one another at an interface therebetween whereby said backing plate structurally supports said screening medium;

one of said screening medium and said backing plate having a plurality of circumferentially extending recesses formed in its opposing surface and opening at the opposing surface of the other of said screening medium and said backing plate at the interface thereof establishing communication between the respective openings of said screening medium and said backing plate; and

a plurality of axially spaced projections spaced one from the other in the axial direction defining said recesses and projecting radially from one of said screening medium and said backing plate at said interface;

the openings in said screening medium being elongated and extending in a generally axial direction substantially normal to the circumferential extent of said recesses.

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2. (Original) A screen cylinder according to claim 1 including means for releasably connecting said screening medium and said backing plate one to the other.

3. (Amended) A screen cylinder according to claim 2, wherein said [connecting] means for releasably connecting includes a weld [welding said screening medium and said backing plate to one another].

4. (Amended) A screen cylinder according to claim 2, wherein said means for releasably connecting [means] includes an adhesive [gluing said screen medium and said backing plate one to the other].

5. (Amended) A screen cylinder according to claim 2 wherein said means for releasably connecting [means] includes solder [soldering said screen medium and said backing plate one to the other].

6. (Original) A screen cylinder according to claim 1 wherein said recesses are formed in the surface of said screening medium.

7. (Original) A screen cylinder according to claim 6 including rivets for releasably connecting said screening medium and said backing plate one to the other.

8. (Amended) A screen cylinder according to claim 1 wherein said recesses extend axially [at least plural times] more than the axial extent of said projections, said openings in said screening medium having an extent sufficient to span in the axial direction two or more recesses.

9. (Original) A screen cylinder according to claim 1 wherein said recesses are formed in the surface of said backing plate.

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10. (Amended) A screen plate for screening pulp flowing therethrough comprising:

a screening medium having a plurality of slots therethrough and extending generally parallel to one another, said slots having contoured portions on an inflow side of said screening medium; and

a structural backing plate having a plurality of openings therethrough;

said screening medium and said structural backing plate lying in registration one with the other and having respective opposed surfaces in engagement with one another at an interface therebetween whereby said backing plate structurally supports said screening medium;

one of said screening medium and said backing plate having a plurality of recesses formed in its opposing surface and opening at the opposite surface of the other of said screening medium and said backing plate at the interface thereof establishing communication between the openings of said backing plate and said slots of said screening medium;

whereby pulp may flow sequentially through said slots, said recesses and said openings in said backing plate.

11. (Original) A screen plate according to claim 10 wherein said screening medium and said backing plate are cylindrical and lie one within the other, said recesses extending circumferentially and substantially uninterruptedly about said one of said screening medium and said backing plate, said slots in said screening medium extending in a generally axial direction and in a direction substantially normal to the circumferential extent of said recesses.

12. (Thrice Amended) A screen cylinder according to claim 11 wherein said slots have an extent sufficient to span, continuously and without interruption, in the axial direction two or more recesses.

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13. **(Twice Amended)** A screen cylinder according to claim 11 wherein said cylindrical screening medium has elongated outflow slots formed in the opposing surface of said screening medium in radial registry with said contoured slot portions and substantially coextensive therewith, reduced slots in registry with said contoured slot portions and said outflow slots and communicating therebetween, said recesses and said contoured slot portions being formed on the inflow sides of said backing plate and said cylindrical screening medium, respectively, whereby pulp may flow sequentially through said contoured slot portions, said reduced slots and said outflow slots of said screening medium and then through said recesses and said openings of said backing plate.

14. **(Twice Amended)** A screen cylinder according to claim 11 wherein said cylindrical screening medium has reduced slots in registry with said contoured slot portions and in communication therewith, said contoured slot portions and said recesses being formed on inflow and outflow sides of said screening medium, respectively, whereby pulp may flow sequentially through said contoured slot portions, said reduced slots, and said recesses of said screening medium and then through said openings of said backing plate.

15. **(Thrice Amended)** A screen cylinder according to claim [10] 11 including means for releasably connecting said cylindrical screening medium and said cylindrical backing plate [cylinder] one to the other.

16. **(Original)** A screen plate according to claim 10 wherein said recesses are formed in the opposing surface of said screening medium.

17. **(Original)** A screen plate according to claim 10 wherein said recesses are formed in the surface of said backing plate.

18. **(Original)** A method of manufacturing a screen for use in screening for pulp, said screen being formed of a screening plate and a backing plate, said screening plate having first and second opposite faces, comprising the steps of:

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(a) forming elongated, substantially parallel, grooves in said first face, each groove having a side face and a bottom;

(b) forming openings through the bottom of the grooves in said first face and into the screening plate to terminate within the screening plate short of said second face thereof;

(c) forming elongated grooves in the second face of said screening plate inclined relative to the longitudinal extent of the grooves formed in step (a) and to a depth to expose the openings formed in step (b) so that the openings extend entirely through said screening plate, and leave a plurality of ridges in the second face spaced one from the other therealong and extending in a direction inclined relative to the longitudinal extent of said grooves.

19. (Original) A method according to claim 18 wherein said screening plate is formed of metal.

20. (Original) A method according to claim 19 including, subsequent to steps (a), (b) and (c), hardening or plating the metal of said screening plate.

21. (Original) A method according to claim 18 wherein said screening plate is formed of a ceramic.

22. (Original) A method according to claim 18 including machining the first face of the screening layer to form ridges flat on one side and angled on the opposite side.

23. (Amended) A method according to claim [18] 19 including the step of forming the screening plate into a cylindrical shape to form a metal screen cylinder.

24. (New) A screen cylinder according to claim 1, including screws for releasably connecting said screening medium and said backing plate.

25. (New) A screen cylinder according to claim 2, wherein said means for releasably connecting includes a shrink-fit.

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26. (New) A screen cylinder according to claim 1, wherein the plurality of openings in said backing plate are positioned wherein the centers of said openings are located on apices of equilateral triangles.

27. (New) A screen cylinder according to claim 1, wherein the screen cylinder comprises an axial length, and wherein the openings in said screening medium extend an axial distance substantially corresponding to at least 85% of the axial length of the screen cylinder.

28. (New) A screen cylinder according to claim 6, wherein the plurality of axially spaced projections are sized such that the projections do not provide substantial structural support to the screening medium.

29. (New) A screen cylinder according to claim 1, wherein the screen cylinder comprises an axial length, and wherein said screening medium utilizes 85-95% of the screen cylinder axial length.

30. (New) A screen cylinder according to claim 1, wherein said screening medium is hardened via heat-treating.

31. (New) A screen cylinder according to claim 1, further comprising at least one or more of welding, rivets, screws, adhesives, and solder for releasably connecting said screening medium and said backing plate.

32. (New) A screen plate according to claim 10, further including means for releasably connecting said screening medium and said backing plate.

33. (New) A screen plate according to claim 32, wherein said means for connecting comprises a weld.

34. (New) A screen plate according to claim 32, wherein said means for connecting comprises an adhesive.

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35. (New) A screen plate according to claim 32, wherein said means for connecting comprises solder.

36. (New) A screen plate according to claim 10, further including screws for releasably connecting said screening medium and said backing plate.

37. (New) A screen cylinder according to claim 1, wherein the screening medium comprises a screening plate having the plurality of openings.

38. (New) A screen cylinder according to claim 37, wherein the screening plate includes a plurality of contoured grooves.

39. (New) A screen plate according to claim 10, wherein the screening medium comprises a screen plate having the plurality of slots therethrough.